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## Research Interests and Skills

I am fascinated by the physical processes through which the Earth’s surface responds to climatic, tectonic and anthropogenic disturbance. I enjoy exploring the rate and form of landscape adjustment (largely rivers and hillslopes) and the biotic consequences of this adjustment over both human and geologic timescales. To accomplish these tasks, I utilize data from field observations, numerical modeling, digital topographic analysis, physical experimentation and remote sensing. Strong collaborative ties with terrestrial, riparian and aquatic ecologists, hydrologists and biogeochemists have enabled me to study Arctic and Temperate ecosystem sensitivity to changes in climate and land management.

## Professional Preparation

University of California at Berkeley	Geology (with honors)	B.A.	1999
Massachusetts Institute of Technology	Geology/Geomorphology	Ph.D.	2006

## Appointments

Dept. of Geosciences, Idaho State University	Associate Professor	(2012- )
Dept. of Civil Eng., Univ. de Concepción, Chile	Fulbright Scholar, Visiting Professor	(2013-2014)
Arctic Landscape Conservation Cooperative, USGS	Hydrology Chair	(2011-2012)
Dept. of Geosciences, Idaho State University	Assistant Professor	(2006-2012)
Dept. of Earth, Atmos. and Planetary Sci., MIT	Research Assistant	(2003-2006)
Dept. of Earth Sciences, Harvard University	Teaching Assistant	(2003)
Dept. of Earth, Atmos. and Planetary Sci., MIT	Teaching Assistant	(2000-2003)
Cominco Alaska, Red Dog Pb/Zn Mine	Exploration Geologist	(1999-2000)
National Parks Service, Kotzebue, Alaska	Geologic Curriculum Developer	(1999-2000)
FOSS Science, Lawrence Berkeley National Labs	Geologic Curriculum Developer	(1997-1999)
Alvarez Lab, Dept. of Earth Science, UC Berkeley	Ug. Research Assistant,	(1996-1999)

## Active Research Funding:

NSF; “A Field-Based Curriculum for Quantifying Deformation of the Earth’s Surface” \$90,000; Graduate supervision, National curriculum development, workshop leadership	(2016-2018)
DeVlieg Foundation; Research Grant, “Logjam Formation and Breakup, Big Creek, ID” \$60,000; Master’s Student Supervision	(2015-2017)
NSF; “The Legacy of Transience: Understanding landscape adjustment following mountain uplift” \$161,555; Graduate/UG Student Supervision, Landscape evolution	(2014-2017)
NSF; EPSCoR Grant, “RII Track 1: Managing Idaho’s Landscapes for Ecosystem Services” ~\$200,000; Postdoc, Graduate and undergraduate research supervision, Curriculum development.	(2013-2018)
NSF; “Reynolds Creek Critical Zone Observatory” -Role: Senior personnel, Graduate student committee and supervision, course development,	(2013-2018)
ISU – CoSE, “Research Equipment for Flume Facility Development” \$1750; Purchase of materials for filtration, instrument cart and monitoring	(2016-2017)

## Previous Funding, Awards and Honors:

City of Pocatello; “Assessment of Sources of Suspended Sediment, Marsh Creek, ID” \$60,000; Graduate and undergraduate research supervision	(2015-2017)
DeVlieg Foundation; Undergraduate Research Opps., “Large Wood in Big Creek, ID” \$5000; Undergraduate Research Supervision (Emmy Ray)	(2015)
Campbell Scientific, Inc; “IMAGINE Grant: Measurement Instrumentation for Education” ~\$38,000; Purchase of instrumentation to support new field/classroom curriculum	(2015)
NSF-CZO-SAVI Program; “How sensitive is aboveground biomass to snowpack loss?” \$5000; Travel for interdisciplinary work, expanding thesis of Chris Tennant	(2015)
Fulbright Scholar Program, “Taking the Pulse of Chilean Rivers: Teaching and Research” \$30,900; Sabbatical work at Universidad de Concepción, Chile	(2013-2014)
NSF/National Center for Airborne Laser Mapping (NCALM), “Green LiDAR in Big Creek, ID” ~\$30,000; Seed Award to Chris Tennant for acquisition of river bathymetry	(2013-2014)
DeVlieg Foundation; Ug. Research Opps. “Hydraulic scaling in tributaries to Big Creek, ID” \$5000; Undergraduate Thesis Supervision (Holly Young)	(2013-2014)
NASA IDSGC; “Bathymetric LiDAR and the topographic signature of disturbance in riverscapes”(2013-2014) \$17,500; Graduate student stipend and NASA travel funds. Chris Tennant	(2013-2014)
LANL - IGPP Grant, “Carbon-Cycle Dynamics Following Thaw Slumping, Selawik River, AK” \$120,685; Graduate Student Supervision, Geochem. Analysis, Interdisciplinary	(2010-2013)
NSF; EPSCoR Grant, “Water Resources in a Changing Climate” \$750,000; Post-Doc and Graduate Student Supervision, Interdisciplinary	(2008-2013)
NSF; OPP Grant, “Influence of Hillslope Instability (Thermokarst) on Arctic Landscapes” \$251,570; Graduate Student Supervision, Interdisciplinary	(2008-2013)
US Fish & Wildlife Service, “Selawik River Retrogressive Thaw Slump, Northwest, AK” \$192,000; Graduate student support, Water quality and quantity monitoring eqp.	(2009-2012)
USGS - Contracted as, “Chair of the Arctic LCC Hydrology Working Group” \$99,500; Academic Year Salary and Travel, Synthetic, Science Plan Development	(2011-2012)
State of Idaho: Division of Public Works, EPSCoR, “Flume Facility Renovation at ISU” \$348,400; Modernization and expansion of departmental flume facility	(2008-2012)
LANL - LDRD Award, Support for Field activities for Selawik River Science, AK \$15,000; Funding to cover logistic and science operations.	(2012)
NSF; EAR-IF Grant, Upgrade of Computing Equipment in the Digital Mapping Laboratory \$75,000; Purchase and installation of 24 workstations, 2 servers, Gigabit network	(2009-2010)
INRA - DOE, “Tools for Monitoring Arctic River Processes and Fluxes, Northwest, AK” \$40,000; Graduate student, monitoring equipment, travel	(2009-2011)
INRA – DOE, “INRA Water Resources Steering Committee” \$8,333; Support initial water resources research in the Salmon River	(2008-2010)
DeVlieg Foundation; Research Grant, “Topographic Control on Basin Hydrology, Big Creek, ID” \$40,000; Master’s Student Supervision	(2008-2010)
NASA, ID Space Grant Consort., “Lunar Volcanic Geomorph, Lithosphere Struct., Composition” \$60,710; Supervision of 2 Undergraduate Students, Travel to meetings	(2008-2009)
DeVlieg Foundation; Undergraduate Research Opps., “Suspended Sediments in Big Creek, ID” \$10,000; Undergraduate Thesis Supervision (E. Carlson and L. Junk)	(2008-2010)
Idaho State University; Undergraduate Research Grant: Fire and Sediment Production, Big Creek \$2,000; Undergraduate field and thesis supervision (Carlson)	(2008-2009)
DeVlieg Foundation; Visiting Professional Travel Grant: To Teach “Digital Tools” Workshop \$1000; Travel and Accommodation to Taylor Ranch to teach a Shortcourse	(2007)
Idaho State University; Faculty Research Grant: Arctic River Response to Climate Change \$5000; Funds to initiate research in Alaska and travel to present results	(2006-2007)
Idaho State University, Academic Computing Fund, Hardware upgrade Support of computer purchase	(2006)
NSF; Awarded distinction “Person of Excellence” for work done during GRF fellowship	(2006)
N.S.F. Graduate Research Fellowship (GRF)	(2000-2005)
N.S.F. Research Grant, “Knickpoint Migration: Processes, Rates and Form”	(2002-2005)
M.I.T. Departmental Award for ‘Excellence in Teaching’	(2004-2005)
M.I.T. Presidential Graduate Fellowship	(2000-2001)

MIT EAPS Research Grants: Enabled attendance of meetings / short courses outside thesis topic: (2002-2005)

- “The Physics and Predictability of Rainfall and Floods,” Aosta, Italy
- “Tectonics, Climate and Landscape Evolution,” Taroko, Taiwan
- “NSF-MARGINS Workshop on the Waipaoa River System,” New Zealand
- “Cryosphere / Hydrology / Climate processes,” Montreal, Canada
- “Arctic Climate & Terrestrial Ecosystems,” U.A.F., Fairbanks, AK
- “NCED conference on Mountain Rivers”
- “Hydrologic Responses to Degrading Permafrost,” U.A.F., AK

Thesis Research Grant: Northern California Geological Society (1998-1999)

McDonald Foundation: Academic Achievement Scholarship (1998-1999)

## Graduate and Undergraduate Student Supervision

- *Graduate Thesis Advisor*

James McNabb, Ph.D. candidate in Geosciences

*The Production and Transport of Talus*

Katherine Wehrs, M.S. candidate in Geology

*Transient Landscapes in the South Fork Eel River*

Graham Meese, M.S. candidate in Geology

*Effectiveness of Marsh Creek Conservation Strategies on Water Quality*

Ian Lauer, M.S. candidate in Geology

*Measurement of Ground Deformation Using Geodetic Tools at the Salmon Falls Landslide*

Nakul Deshpande, M.S. Geology, 2017

*Log Jam Formation and Breakup, Big Creek, Idaho*

Jimmy Guilinger, M.S. Geology, 2017

*Appraising Sediment Sources and Remediation Strategies in Marsh Creek, Idaho*

Chase Cusack, M.S. in Environmental Science and Mgt. (Engineering), 2016

*Analysis of historic turbidity fluctuations in a highly impacted stream, Marsh Creek, Idaho*

Chris J. Tennant, Ph.D. in Geosciences, 2015 (co-advised with Dr. Sarah Godsey)

*The Sensitivity of Mountain Snowpack to Warming*

Amy Jensen, M.S. in Geology; 2013

*Geomorphic and Biogeochemical Controls on Carbon Cycle Dynamics Following Thaw Slumping, Selawik River, Alaska*

Theodore Barnhart, M.S. in Geology; 2013

*Using High Frequency Terrestrial Lidar to Correlate Meteorological and Hydrological Drivers to the Growth of a Retrogressive Thaw Slump along the Selawik River, Alaska*

Kelsey Lanan, M.S. in Geology; 2013

*A Glacial and Geomorphic History of the Upper Selawik Valley, Northwest Alaska, with Implications for Thermokarst Formation*

John (Pat) Calhoun, M.S. in Environmental Science and Mgt. (Engineering); 2012

*Permafrost Degradation and River Metabolism: Downstream Effects of Retrogressive Thaw Slump Sedimentation on Ecosystem Metabolism in the Selawik River, Alaska*

Kacy Krieger, M.S. in Geology; M.S.; 2012

*The Topographic Form and Evolution of Thermal Erosion Features: A First Analysis Using Airborne and Ground-Based LiDAR in Arctic Alaska*

Chris J. Tennant, M.S. in Geology; 2011

*The Influence of Precipitation Phase and Hypsometry on Hydrograph Form: An Analysis of 12 Tributaries across the Rain-to-Snow Transition in the Salmon River, Idaho*

Brad J. Gamett, M.S. in Geographic Information Science; 2010

*An Accuracy Assessment of Digital Elevation Data and Subsequent Hydrologic Delineations in Low Relief Terrain: An Analysis for Idaho's Little Lost River Valley*

Linda Tedrow, M.S. in Geographic Information Science; 2010

*Mobile GIS Tools for Stream Assessment*

Kelly Whitehead, M.S. in Geology; 2010

*Spatial Analysis of Topographic and Geologic Controls on Hillslope Stability in the Ridge Basin Area, Northwest Los Angeles County*

Neil F. Olson, M.S. in Geology; 2010

*Hydrology of Big Creek, Idaho: Spatial and Temporal Heterogeneity of Runoff in a Snow-Dominated Wilderness Mountain Watershed*

- *Graduate Thesis Committee Member*

Caitlin Rushlow	Ph.D. candidate in Geosciences
James Paris	Ph.D. candidate in Biology (Stream Ecology Lab),
Alex Rozin	Ph.D. in Geosciences (withdrawn)
Julia Larouche	Ph.D. in Natural Resources, Univ. of Vermont, 2015
Danny Anderson	Ph.D. in Engineering and Applied Science, 2012
Ryan Bellmore	Ph.D. in Biology (Stream Ecology Lab), 2011
Joseph Benjamin	Ph.D. in Biology (Stream Ecology Lab), 2010
Madeleine Mineau	Ph.D. in Biology (Stream Ecology Lab), 2010
Heather Bechtold	Ph.D. in Biology (Stream Ecology Lab), 2010
Harrison Colandrea	M.S. in Geology, 2016
Nick Patton	M.S. in Geology, 2016
Maegan Tracy	M.S. in Anthropology, 2015
Lisa Leedham	M.S. as Physician's Assistant (GFR)
Troy Berry	M.S. in Environmental Science and Mgt. (Engineering), 2014
Kerry Riley	M.S. in Geology, Boise State University, 2012
Michael Frey	M.S. in Geographic Information Science, 2012
Jayson Murgoitio	M.S. in Geographic Information Science, 2012
Hazel Reynolds	M.S. in Geology, 2011
Melissa Foster	M.S. in Geology, Humboldt State Univ., CA, 2010
Elijah Eversole	M.S. in Geology, 2008
Caleb Stroup	M.S. in Geology, 2008
Nathanial Arave	M.S. in Geographic Information Science, 2008
Eric Rafn	M.S. in Geographic Information Science, 2007
Sarah Stadler	M.S. in Biology
Ryan Blackadar	M.S. in Biology, (Stream Ecology Lab), 2013
Hannah Harris	M.S. in Biology, (Stream Ecology Lab), 2013
Javan Bauder	M.S. in Biology, 2010
Heidi Albano	M.S. in Biology, 2010
Sarah Schoen	M.S. in Biology, 2008

- *Undergraduate Thesis/Research Supervision*

Jeff Carpenter, B.S. Geology, MURI, Remote sensing of restoration practices in Marsh Creek, ID  
 Jared Anderson, B.S. Geology, 2017, MURI, Continuous panoramic photography for stream evaluation.  
 Mason Wegert B.S. Mech. Engineering, 2018, Development of tools for analysis of water quality data, MURI.  
 Jeff Nichols; B.S. Geology, 2017, Quantifying Marsh Creek Sediment Character and Flux, CPI.  
 Ian Lauer; B.S. Geology, 2016, Flume design and installation. Instrumentation cart development, CPI  
 Michael Martin; B.S. EES, 2016, Quantifying Marsh Creek Sediment Character and Flux, MURI.  
 Kyle O'Keefe; B.S. Geology (UCSB), 2016, LiDAR analysis of risk and hydrology in Grand Teton NP, WY  
 Emmy Hamilton; B.S. EES, 2016, Census and Character of in Channel Wood, Big Creek, ID, DeVlieg  
 Tisha Farris; B.S. EES (John's Hopkins), 2014, Msmts. toward a Water Balance in Gibson Jack Ck., ID, MURI  
 Holly Young; B.S. Geology, 2014, Scaling Relations in Channel Geometry in Tribs. to Big Creek, ID, DeVlieg.  
 Christopher Lile, B.S. Geology, 2013, RFID Bedload Tracking across a Climate Gradient, Central Idaho.  
 Aaron Trevino; B.S. Geology, 2011, Tracking Bedload Transport Using RFID Tags; When does what move?  
 Liam Junk; B.S. EES, 2010, Temporal and Spatial Variation in Suspended Sediment in Big Creek, ID  
 Eric Carlson; B.A. Geology, 2009, Sediment Delivery After Wildfire: Does Big Creek Feel the Burn?  
 Kacy Krieger; B.S. Geology 2008, Reconstructing an incised landscape using imagery and GIS, Waipaoa, NZ

## Publications: Peer-Reviewed (\*supervised student/postdoc)

### 2017

- \*Tennant, C.J., Harpold, A.A., Lohse, K.A., Godsey, S.E., Crosby, B.T., Larsen, L.G., Brooks, P.D., VanKirk, R.W., Glenn, N.F., accepted, Regional sensitivities of seasonal snowpack to elevation, aspect, and vegetation cover in western North America, *Water Resources Research*, 53, DOI:10.1002/2016WR019374.
- Pratt-Sitaula, B., Crosby, B.T. and Crosby, C., 2017, Integrating Topographic Imaging into Geoscience Field Courses, *EOS*, vol 98, DOI: 10.1029/2017EO067411

### 2015

- Pelletier, J.D., Murray, A.B., Pierce, J.L., Bierman, P.R., Breshears, D.D., Crosby, B.T., Ellis, M., Foufoula-Georgiou, E., Heimsath, A.M., Houser, C., Lancaster, N., Marani, M., Merritts, D.J., Moore, L.J., Pederson, J.L., Poulos, M.J., Rittenour, T.M., Rowland, J.C., Ruggiero, P., Ward, D.J., Whipple, K.X., Wickert, A.D., Yager, E.M., 2015, Forecasting the response of Earth's surface to future climatic and land-use changes: A review of methods and research needs. *Earth's Future*, vol. 3, no. 7, pp. 220-251, DOI: 10.1002/2014EF000290
- \*Tennant, C.J., Crosby, B.T., Godsey, S.E., VanKirk, R.W., Derryberry, D.R., 2015, A simple framework for assessing the sensitivity of mountain watersheds to snowpack loss, *Geophysical Research Letters*, vol. 42, no. 8, pp. 2814-2822, DOI: 10.1002/2015GL063413
- \*Tennant, C.J., Crosby, B.T. and Godsey, S.E. 2015, Elevation-dependent responses of streamflow to climate warming, *Hydrological Processes*, vol. 29, pp. 991-1001, DOI: 10.1002/hyp.10203

### 2014

- Bierman, P.R., Corbett, L., Graly, J.A., Neumann, T., Lini, A., Crosby, B.T., Rood, D., 2014, Preservation of a pre-glacial landscape under the center of the Greenland Ice Sheet, *Science*, vol. 344, no. 6182, pp 402-405, DOI: 10.1126/science.1249047
- Link, P.K., Crosby, B.T., \*Lifton, Z.M., \*Eversole, E.A., Rittenour, T.M., 2014, The Late Pleistocene (17 ka) Solder Bar Landslide and Big Creek Lake, Frank Church-River of No Return Wilderness, Central Idaho. *Rocky Mountain Geology*, vol. 49, no. 1, pp. 17-31, DOI: 10.2113/gsrocky.49.1.17
- \*Jensen, A.E., Lohse, K.A., Crosby, B.T., and Mora, C.I., 2014, Variations in soil carbon dioxide efflux across a thaw slump chronosequence in northwestern Alaska, *Environmental Research Letters*, 9:025001, 11p. doi:10.1088/1748-9326/9/2/025001.
- \*Tang, C., Chen, D., Crosby, B.T., Piechota, T.C. and Wheaton, J.M., 2014, Is the PDO or AMO the climate driver of soil moisture in the Salmon River Basin, Idaho? *Global and Planetary Change*, vol. 120, pp. 16-23, DOI: 10.1016/j.gloplacha.2014.05.008.

### 2013

- Willenbring, J.K., Gasparini, N.M., Crosby, B.T. and Brocard, G., 2013, What Does a Mean Mean? The temporal evolution of detrital cosmogenic denudation rates in a transient landscape, *Geology*, 41: 12, p. 1215–1218, doi:10.1130/G34746.1
- \*Barnhart, T.B. and Crosby B.T., 2013, Comparing Two Methods of Surface Change Detection on an Evolving Thermokarst Using High-Temporal-Frequency Terrestrial Laser Scanning, Selawik River, Alaska. *Remote Sensing*, 5(6), 2813-2837, doi:10.3390/rs5062813.
- Crosby, B.T. and Martin, P.D., 2013, A Terrestrial Environmental Observation Network (TEON) for the Arctic Landscape Conservation Cooperative; Objectives and Implementation. USFWS/USGS Publication, 50 p., <http://arcticlcc.org/projects/teon>
- \*Davis, J.M., Baxter, C.V., Rosi-Marchall, E.J., Pierce, J.L. and Crosby, B.T., 2013, Anticipating Stream Ecosystem Responses to Climate Change: Toward Predictions that Incorporate Effects Via Land–Water Linkages, *Ecosystems*, DOI: 10.1007/s10021-013-9653-4
- \*Davis, J.M., Baxter, C.V., Minshall, G.W., \*Olson, N.F., Tang, C., Crosby, B.T., 2013, Climate-induced shift in hydrologic regime alters basal resource dynamics in a wilderness river ecosystem, *Freshwater Biology*, v. 58, no. 2, DOI: 10.1111/fwb.12059.
- Whipple, K.X., \*DiBiase, R.A., Crosby, B.T., 2013. Bedrock Rivers. In: Shroder, J. (Editor in Chief), Wohl, E. (Ed.), *Treatise on Geomorphology*. Academic Press, San Diego, CA, vol. 9, *Fluvial Geomorphology*, pp. 550–573.
- Schuur, E.A.G., B.W. \*Abbott, W.B. Bowden, V. Brovkin, P. Camill, J.G. Canadell, J.P. Chanton, F.S. Chapin III, T.R. Christensen, P. Ciais, B.T. Crosby, C.I. Czimczik, G. Grosse, J. Harden, D.J. Hayes, G. Hugelius, J.D. Jastrow, J.B. Jones, T. Kleinen, C.D. Koven, G. Krinner, P. Kuhry, D.M. Lawrence, A.D. McGuire, S.M. Natali, J.A. O'Donnell, C.L. Ping, W.J. Riley, A. Rinke, V.E. Romanovsky, C. Schädel, K. Schaefer, J. Sky, Z.M. Subin, C. Tarnocai, M. Turetsky, M. Waldrop, K. M. Walter-Anthony, K.P. Wickland, C.J. Wilson, S.A. Zimov., 2013, Expert

**2012**

- \*Tang, C., Crosby, B.T., Wheaton, J.M., Piechota, T.C., 2012, Assessing streamflow sensitivity to temperature increases in the Salmon River Basin, Idaho, *Global and Planetary Change*, 88-89, p32-44.
- Bowden, W.B., \*Larouche, J.R., Pearce, A.R., Crosby, B.T., \*Krieger, K.E., Flinn, M.B., Kampman, J., Gooseff, M.N., Godsey, S., Jones, J.B., \*Abbott, B., Kling, G.W., Mack, M., Schuur, E.A.G., Baron, A., Rastetter, E.B., 2012, An Integrated Assessment of the Influences of Upland Thermal-Erosional Features on Landscape Structure and Function in the Foothills of the Brooks Range, Alaska, in Proceedings of the Tenth international conference on Permafrost; international contributions, *International Conference on Permafrost (ICOP) Proceedings*, 10, Volume 1, p. 61-66.

**2011**

- Schuur, E.A.G., B.W. \*Abbott, W.B. Bowden, V. Brovkin, P. Camill, J.P. Canadell, F.S. Chapin III, T.R. Christensen, J.P. Chanton, P. Ciais, P.M. Crill, B.T. Crosby, C.I. Czimczik, G. Grosse, D.J. Hayes, G. Hugelius, J.D. Jastrow, T. Kleinen, C.D. Koven, G. Krinner, P. Kuhry, D.M. Lawrence, S.M. Natali, C.L. Ping, A. Rinke, W.J. Riley, V.E. Romanovsky, A.B.K. Sannel, C. Schädel, K. Schaefer, Z.M. Subin, C. Tarnocai, M. Turetsky, K. M. Walter-Anthony, C.J. Wilson, S.A. Zimov., 2011, High risk of permafrost thaw. *Nature* 480, 32-33, doi:10.1038/480032a

**2010**

- Rowland, J.C., C.E. Jones, G. Altmann, R. Bryan, B.T. Crosby, G.L. Geernaert, L. D. Hinzman, D.L. Kane, D.M. Lawrence, A. Mancino, P. Marsh, J.P. McNamara, V.E. Romanovsky, H. Toniolo, B.J. Travis, E. Trochim, C. J. Wilson, 2010: Arctic landscapes in transition - Geomorphic responses to degrading permafrost. *EOS*, 91, 229-230.

**2009**

- Ames, D.P., \*Rafn, E., Van Kirk, R. and Crosby, B.T. 2009. Estimation of Stream Channel Geometry in Idaho using GIS-Derived Watershed Characteristics. *Environmental Modeling and Software*, vol. 24, no. 3, p. 444-448

**2008**

- Ouimet, W.B., Whipple, K.X., Crosby, B.T. Johnson, J.P. Schildgen, T.F., 2008, Epigenetic Gorges in Fluvial Landscapes, *Earth Surface Processes and Landforms*, vol. 33, no. 13, p. 1993-2009

**2007**

- Crosby, B. T., Whipple, K. X, Gasparini, N. M. and Wobus, C. W., 2007, Formation of Fluvial Hanging Valleys: Theory and Simulation, *Journal of Geophysical Research-Earth Surface*, vol. 112, F03S10, doi:10.1029/2006JF000566

**2006**

- Crosby, B.T., Whipple, K.X., 2006, Knickpoint initiation and distribution within fluvial networks: 236 waterfalls in the Waipaoa River, North Island, New Zealand, *Geomorphology*, v. 82, no. 1-2.
- Wobus, C.W., Crosby, B.T., Whipple, K.X., 2006, Hanging valleys in fluvial systems: Controls on occurrence and implications for landscape evolution, *Journal of Geophysical Research-Earth Surface*, v. 111, no. F2, F02017, 10.1029/2005JF000406.
- Wobus, C.W., Whipple, K.X., Kirby, E., Snyder, N.P., Johnson, J., Spyropolou, K., Crosby, B.T., Sheehan, D., 2006, Tectonics from topography: Procedures, promise and pitfalls. in Willett, S.D., Hovius, N., Brandon, M.T., and Fisher, D. M., eds., Tectonics, Climate and Landscape Evolution: Geological Society of America Special Paper 398, Penrose Conference Series, p. 55-74.

### **Publications: In Review**

- \*Patton, N.R., Lohse, K.A., Seyfried, M.S., Crosby, B.T. and Godsey, S.E., in review, Predicting soil thickness on soil mantled hillslopes, at *Science*, first submitted 11/2016, revised 8/2017.
- \*Tennant, C.J., Godsey, S.E., Crosby, B.T., Derryberry, D.R., in review, Predicting landscape scale snowpack loss using a climate and elevation-based framework, at *Water Resources Research*, resubmitted 5/31/17
- \*Barnhart, T.B., Crosby, B.T., Derryberry, D.R. and Rowland, J.C., in review, Controls on Retrogressive Thaw Slump Retreat Rate and Form, Selawik River, Alaska, at *Permafrost and Periglacial Processes*
- \*Jensen A.E., Crosby, B.T., Mora, C.I., Lohse, K.A., in review, Carbon dioxide and methane in soil profiles across a thaw slump chronosequence, northwestern Alaska. at *Journal of Geophysical Research: Biogeosciences*

### **Publications: In Preparation**

- \*Guilinger, J.J. and Crosby, B.T., in prep. A dense, longitudinal array of water quality sondes reveals spatial and temporal complexities in suspended sediment flux, Marsh Creek, ID, for submission to the *Journal of the American Water Resources Association*
- \*Deshpande, N. and Crosby, B.T., in prep. Logjam Deformation: Experimental analogs with variable flow, for submission to *Geomorphology*
- \*Deshpande, N. and Crosby, B.T., in prep. The structural fabric and deformation of a mountain logjam, for submission to *Geophysical Research Letters*
- Crosby, B.T., \*Barnhart, T.B., and Rowland, J.C., in prep. Topographic Evolution of a Retrogressive Thaw Slump Derived from SfM, Ground Surveys and Satellite Photogrammetry, for submission to *Earth Surface Processes and Landforms*
- \*Krieger, K.E., Crosby, B.T., Balsler, A.W. and Bowden, W.B., in prep, Aerial LiDAR Reveals the Distribution and Morphology of Thermal Erosion Features across a Chronosequence of Glacial Deposits, for submission to *Geological Society of America Bulletin*.
- Crosby, B.T., Bierman, P.R., \*Larouche, J.R., Bowden, W.B., in prep, Meteoric <sup>10</sup>Be Profiles in Frozen Ground: Two examples from Alaska's North Slope, for submission to *Permafrost and Periglacial Processes*
- Crosby, B. T., and Whipple, K. X., in prep, Knickpoint Initiation at Tributary Junctions: a field-based comparison of trunk and tributary response to incision; for submission to *Geomorphology*
- \*Reynolds, H, Thackray, G.D., Crosby, B.T., Derryberry, D., prep, Influences of spring season precipitation on glacier mass balance in the Teton Range, Wyoming, USA, for submission to *Geomorphology*

### **Publications: Theses, Patents, Reports and Conference Publications**

- Lohse, K. A., N. Patton, S. Godsey, B Crosby. Soil Depth Measuring System and Method, Provisional Patent Application, September 22, 2017, #62/561,973
- \*Whitehead, K.M., Crosby, B.T. and Mahar, J., 2009, Spatial Analysis of Hillslope Failure using High-Resolution Topographic Datasets, Southern California; Proceedings of 42<sup>nd</sup> Symposium, Engineering Geology and Geotechnical Engineering, p. 5-13
- \*Tennant, C.J. and Crosby, B.T., 2009, Distinct Regimes: The Hydrology and Geomorphology of Twelve Tributaries to the Salmon River, Idaho; Proceedings of 42<sup>nd</sup> Symposium, Engineering Geology and Geotechnical Engineering, p. 186-203
- Crosby, B. T., 2006, Transient Response of Bedrock River Networks to Sudden Base Level Fall, Ph.D. Thesis, Massachusetts Institute of Technology, Cambridge, MA, USA. 144 p.
- Crosby, B.T., 1999, Fluvial Terraces and Tributary Junctions: a study along the South Fork Eel River, an undergraduate honors thesis, University of California at Berkeley, USA. 52 p.

## Conference Presentations

2017

- Crosby, B.T., Rodgers, D.W., Lauer, I.H., 2017, Revisiting the Borah Peak Leveling Line: 30+ years of interseismic deformation across the Lost River fault, Abstract TXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Crosby, B.T., Lauer, I., Pratt-Sitaula, B., 2017, High Precision Positioning at Field Camp: Using GNSS as the primary data source to answer geologic questions, Abstract EDXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Deshpande, N., Crosby, B.T., 2017, Logjam Deformation: Experimental analogs with variable flow, Abstract EPXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Guilinger, J., Crosby, B.T., Catch and Release: A dense, longitudinal array of water quality sondes reveals spatial and temporal complexities in suspended sediment flux, Abstract EPXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Lauer, I.H., Crosby, B.T., 2017, High-precision, continuous GPS data reveals seasonal groundwater influence on the deformation of Salmon Falls landslide, a slow moving, rotational feature in central Idaho, EPXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Meese, G., Crosby, B.T., 2017, Quantifying the Effectiveness of Best Management Practices on Water Quality in an Agriculturally Dominated Watershed: A Case Study from Marsh Creek, ID, Abstract EPXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Wehrs, K., Crosby, B.T., 2017, Do knickpoints unzip watersheds? Longitudinal observations of terrace and hillslope response to mainstem incision along the South Fork Eel River, California, Abstract EPXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Lyons N.J., Gasparini N.M., Crosby B.T., Wehrs K., Willenbring J.K., 2017, The dynamics of sediment size and transient erosional signals in heterogeneous lithologies, Abstract EPXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Charlevoix, D.J., Pratt-Sitaula, B., Douglas, B.J., Crosby, B.T., Crosby, C.J., Lauer, I.H., Shervais, K., 2017, Teaching Resources and Instructor Professional Development for Integrating Laser Scanning, Structure from Motion, and GPS Surveying into Undergraduate Field Courses, EDXX-XXXX, presented at 2017 Fall Meeting, American Geophysical Union, New Orleans, LA, 11-15 Dec.
- Douglas, B.J., Crosby, C.J., Pratt-Sitaula, B., Crosby, B.T., Shervais, K., Charlevoix, D.J., 2017, Using High Resolution Topography Data in Undergraduate Geoscience Field Courses, Geological Society of America Abstracts with Programs. Vol. 49, No. 6, Session 262-4, doi: 10.1130/abs/2017AM-305078, INVITED
- Meese, G., Taylor, C., Crosby, B.T., 2017, Assessing Outcomes of Best Management Practices of Water Quality in Marsh Creek Basin of Southeast Idaho, PS 36-74, Ecological Society of America Annual Meeting, Portland, OR, 7-10 Aug.
- Vitale-Sullivan, C., Crosby, B.T., Reinhardt, K., Barber, J.R., Aho, K., 2017, Spectral Complexity within River Soundscapes, Idaho Conference on Undergraduate Research (ICUR), Boise, ID, 26-27 July.
- Anderson, J., Guilinger, J., Meese, G., Crosby, B.T., 2017, Visualizing land use and water quality using location-based photography: a river kayak survey of Marsh Creek, Idaho, presented at 2017 ISU Graduate Research Symposium, Pocatello, ID, 31 Mar - 1 Apr.
- Guilinger, J., Meese, G., Crosby, B.T., 2017, Suspended sediment load and geochemical data reveals near-channel sediment sources along an impaired Idaho channel, presented at 2017 ISU Graduate Research Symposium, Pocatello, ID, 31 Mar - 1 Apr.
- Meese, G., Crosby, B.T., 2017, Floods, Fences, and Fine Sediment: Building the historical context for restoration in Marsh Creek, ID, presented at 2017 ISU Graduate Research Symposium, Pocatello, ID, 31 Mar - 1 Apr. (Awarded “**Top Poster**” in Plant Ecology & the Environment)
- Deshpande, N., Crosby, B.T., 2017, The structural fabric and deformation of a mountain logjam: creep, cameras and chopsticks, presented at 2017 ISU Graduate Research Symposium, Pocatello, ID, 31 Mar - 1 Apr.
- Anderson, J., Guilinger, J., Meese, G., Crosby, B.T., 2017, Visualizing land use and water quality using location-based photography: a river kayak survey of Marsh Creek, Bannock County, Idaho, Abstract #081, presented at 2017 annual meeting of the Association of American Geographers, Boston, MA, 5-9 Apr.



## 2016

- Crosby, B.T., 2016, Comparing ArcticDEM against LiDAR in Alaska: Tests of uncertainty in elevation and hydrologic delineation, Abstract EP21D-0914, presented at 2016 Fall Meeting, AGU, San Francisco, Calif., 12-16 Dec.
- Deshpande, N., Crosby, B.T., 2016, The structural fabric and deformation history of a mountain logjam: cameras, creep, and catastrophe, Abstract EP53C-0981, presented at 2016 Fall Meeting, AGU, San Francisco, Calif., 12-16 Dec.
- Guilinger, J.J., Crosby, B.T., 2016, From Source to Confluence – Complex Patterns in Suspended Sediment Transport Revealed by a Dense Longitudinal Array of 13 Sensors Along an Intensively-Managed Stream in SE Idaho Abstract H23B-1540, presented at 2016 Fall Meeting, AGU, San Francisco, Calif., 12-16 Dec.
- Pratt-Sitaula, B., Walker, R., Douglas, B.J., Crosby, B.T., Charlevoix, D.J., Crosby, C.J., Shervais, K., 2016, Societal challenges-oriented data-rich undergraduate teaching resources for geoscience classrooms and field courses, Abstract ED11F-06, presented at 2016 Fall Meeting, AGU, San Francisco, Calif., 12-16 Dec.
- Pratt-Sitaula, B., Shervais, K., Crosby, C.J., Douglas, B.J., Crosby, B.T., Charlevoix, D.J., 2016, Teaching Structure from Motion to Undergraduates: New Learning Module for Field Geoscience Courses, Abstract EP21D-0919, presented at 2016 Fall Meeting, AGU, San Francisco, Calif., 12-16 Dec.
- Crosby, B.T., Guilinger, J.J., Cusack, C., Meese, G., 2016, Water Quality in Marsh Creek: Making sound investments in conservation benefits for both rural and urban communities, Idaho NSF EPSCoR Annual Meeting, Coeur d'Alene, Idaho, 20 October.
- Pratt-Sitaula, B., Douglas, B., Walker, R., Crosby, B.T., Charlevoix, D., Crosby, C., Shervais, K., 2016, Data-rich, societally-relevant undergraduate teaching resources for geoscience classrooms and field courses, Geological Society of America *Abstracts with Programs*, Vol. 48, No. 7., Session 305-8.
- Guilinger, J., Crosby, B.T., Wegert, M., Nichols, J., Martin, M., 2016, Appraisal of suspended sediment in Marsh Creek, ID, presented at the 2016 47th Annual Binghamton Geomorphology Symposium, Fort Collins, CO, 9/17 - 9/18.
- Deshpande, N.S., Crosby, B.T., Monitoring the deformation of a mountain logjam, presented at the 47th annual Binghamton Geomorphology Symposium, Colorado State University, Fort Collins, Colorado, September 17 – 19, 2016.
- Crosby, B.T., Barnhart, T.B., Rowland, J.C. and Morin, P., 2016, High resolution topography for measuring the response of a warming arctic landscape: A case study from Alaska and the promise of arctic-wide coverage (INVITED), CUAHSI 2016 Biennial Colloquia on Water Science, National Conservation Training Center, Shepherdstown, WV, 24-27 July.
- Guilinger, J., Crosby, B.T., Wegert, M., Nichols, J., Martin, M., 2016, Appraisal of suspended sediment in Marsh Creek, ID using multiple turbidity time series along the mainstem, presented at 2016 58th Idaho Academy of Science and Engineering Annual Meeting and Symposium Pocatello, ID, 3/31 – 4/2.
- Hamilton, E. Deshpande, N., Crosby, B.T., 2016, Log Jams along Big Creek, presented at 2016 58th Idaho Academy of Science and Engineering Annual Meeting and Symposium Pocatello, ID, 3/31 – 4/2.

## 2015

- Crosby, B.T., Barnhart, T.B. and Rowland, J.C., 2015, The high resolution topographic evolution of an active retrogressive thaw slump compiled from a decade of photography, ground surveys, laser scans and satellite imagery, Abstract EP54B-05, presented at 2015 Fall Meeting, AGU, San Francisco, Calif., 14-18 Dec.
- Patton, N., Lohse, K.A., Seyfried, M., Crosby, B.T. and Godsey, S.E., 2015, Determining Total Soil Carbon Storage in the Critical Zone Using Topography and Lithology, Abstract H21C-1381, presented at 2015 Fall Meeting, AGU, San Francisco, Calif., 14-18 Dec.
- Tennant, C.J., Harpold, A., Crosby, B.T., Godsey, S.E. and Lohse, K.A., 2015, LiDAR illuminates the influence of elevation, aspect, and vegetation on seasonal snowpack: case studies from four western Critical Zone Observatories, Abstract C33C-0826, presented at 2015 Fall Meeting, AGU, San Francisco, Calif., 14-18 Dec.
- Willenbring, J.K., Brocard, G., Gasparini, N.M., Crosby, B.T., 2015, Persistent landscape transience recorded by in situ-produced <sup>10</sup>Be and numerical modeling, Geological Society of America *Abstracts with Programs*, Vol. 47, No. 7., Session 268.
- Tennant, C.J., Crosby, B.T., Godsey, S.E., VanKirk, R.W., Derryberry, D.R., 2015, A Simple Framework for Quantifying Warming-based Snowpack Declines at the Landscape Scale, Graduate Research Symposium, ISU Office of Research, March, 2015

Tennant, C.J., Crosby, B.T., Godsey, S.E., VanKirk, R.W., Derryberry, D.R., 2015, A Simple Framework for Quantifying Warming-based Snowpack Declines at the Landscape Scale, USU Spring Runoff Conference, Logan Utah, April 2015.

## 2014

Tennant, C.J., Crosby, B.T., Godsey, S.E., VanKirk, R.W., Derryberry, D.R., 2014, A Simple Framework for Quantifying Warming-based Snowpack Declines at the Landscape Scale, Abstract C43A-0366, presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

Crosby, B.T., 2014, Finding a Home for Technology in a Traditional Geology Field Camp: Lessons from Idaho's Lost River Field Station (INVITED), Field Education and Support by the UNAVCO GAGE Facility, Boulder, CO, 17-18 Nov.

Crosby, B.T. and Meier, C.I., 2014, The Importance of Fluvial Geomorphology in Hydraulic Engineering, Keynote speaker at El XXI Congreso de Ingeniería Hidráulica, University of Concepción, Chile, 12-14 Jan.

## 2013

Willenbring, J.K., Gasparini, N.M., Crosby, B.T., Brocard, and P. Belmont, 2013, Isotopic hysteresis in detrital cosmogenic nuclide-derived denudation rate studies (INVITED), Abstract EP22B-02, presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

Barnhart, T.B., Crosby, B.T., Derryberry, D.R. and J.C. Rowland, 2013, Using High-temporal-resolution, Repeat Terrestrial LiDAR to Compare Topographic Change Detection Methods and to Elucidate the Hydrometeorologic Controls on the Retreat Rate and Form of the Selawik Retrogressive Thaw Slump, Northwest Alaska, Abstract G33A-0966, presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

Rowland, J.C., Gangodagamage, C., Crosby, B.T., Pope, P., Brumby, S., Wilson, C.J., 2013, Sensitivity of permafrost dominated river and stream banks to climate change. Abstract H41B-1234, presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

Gasparini, N.M., Whipple, K.X., Willenbring, J.K., Crosby, B.T., Brocard, G., 2013, What can a numerical landscape evolution model tell us about the evolution of a real landscape? Two examples of modeling a real landscape without recreating it. Abstract EP33A-0870, presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

Crosby, B.T. and Meier, C.E., 2013, The Importance of Fluvial Geomorphology in Hydraulic Engineering. XXI Congreso Chileno de Ingeniería Hidráulica, Universidad de Concepcion.

Jensen, A.E., Mora, C., Crosby, B.T., Lohse, K.A., 2013, Carbon dynamics across a retrogressive thaw slump soil chronosequence in northwestern Alaska, Geological Society of America *Abstracts with Programs*, Vol. 45, No. 7., Paper No. 99-2.

Willenbring, J.K., Gasparini, N.M., Crosby, B.T., Brocard, G., 2013, What Does a Mean Mean? The temporal evolution of detrital cosmogenic denudation rates in a transient landscape, Geological Society of America *Abstracts with Programs*, Vol. 45, No. 7., G34746.1

Willenbring, J.K., Gasparini, N.M., Crosby, B.T., Brocard, G., Occhi, M.E. and P. Belmont, 2013, Temporal evolution of detrital cosmogenic denudation rates in transient landscapes from *in situ*-produced and meteoric <sup>10</sup>Be., Goldschmidt Conference, Florence Italy, #5584.

## 2012

Barnhart, T.B., Crosby, B.T., Rowland, J.C. and Finnegan, D., 2012, High-Frequency Terrestrial LiDAR Scanning Reveals Connections between Environmental Drivers and Thaw Slump Headwall Retreat Rate and Form, Selawik River, Alaska, Abstract EP31C-0827 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

Gangodagamage, C., Rowland, J.C., Wilson, C.J., Brumby, S., Prancevic, J.P., Crosby, B.T., Marsh, P., Altmann, G., 2012, Topographic Signature of Climate Change- insights into climatic controls on landscape evolution under permafrost and non-permafrost environments, Abstract EP41C-0817 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

Jensen, A.E., Crosby, B.T., Mora, C., Lohse, K.A., 2012, Carbon Flux and Isotopic Character of Soils and Soil Gas in Stabilized and Active Thaw Slumps in Northwest Alaska, Abstract B21D-0399, presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

Tennant, C.J., Crosby, B.T., and Baxter, C.V., 2012, Does Moss Grow on a Rolling Stone? The Influence of Precipitation Phase on Streamflow Characteristics, Bed Particle Transport and Periphyton Development in 18 Mountain Channels, Central Idaho, Abstract EP31B-0816, presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

Crosby, B.C., Barnhart, T., Calhoun, J.P., Jensen, A., Lanan, K. M., Olson, N.F., Rowland, J.C., 2012, From Thaw Slump to Thalweg: Evaluating the connectivity between hillslope and fluvial

processes along the Selawik River, Alaska, extended abstract to the Tenth International Conference on Permafrost, Salekhard, Russia.

Godsey, S.E., Gooseff, M.N., C.R. Johnson, G.W. Kling, A.E. Giblin, B.T. Crosby, K. Krieger and A.G. Lewkowicz, 2012, Hydrologic and Biogeochemical Responses of Lakes to Fire and Thermokarst Formation in Arctic Alaska, extended abstract to the Tenth International Conference on Permafrost, Salekhard, Russia

Grosse, G., Sannel, A.B.K., Schuur, E.A.G., Research Coordination Network Vulnerability of Permafrost Carbon: Thermokarst Working Group, 2012, A Database Synthesizing Published Data on Thermokarst and Thermo-Erosion Processes, extended abstract to the Tenth International Conference on Permafrost, Salekhard, Russia

Burkart, G, Crosby, B.T., Liljedhal, A., Martin, P, et al., 2012, Building a Network of Watershed Observations Sites in Support of Conservation, American Water Resource Association meeting, Juneau, AK

## 2011

Barnhart, T.B., and Crosby, B.T., 2011, Using High Frequency Terrestrial LiDAR to Correlate Meteorological and Hydrological Drivers to the Expansion of a Retrogressive Thaw Slump along the Selawik River, Alaska, Abstract C52A-05 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Calhoun, J.P. and Crosby, B.T., 2011, Permafrost Degradation and Stream Metabolism in the Arctic: The effect of thaw slump sedimentation on biological productivity and water quality in the Selawik River, Northwest Alaska, Abstract EP23B-0745 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Crosby, B.T. and Rowland, J.C., 2011, Geomorphic Buffering of Climate Signals: A study of how landscapes delay and diminish environmental forcings (INVITED), Abstract EP51C-01 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Crosby, B.T., Willenbring, J.S. and Gasparini, N.M., 2011, What Does a Mean Really Mean? Interpreting Mainstem Detrital CRN Data in Transient Landscapes, a view from the South Fork Eel River, CA, Abstract EP44B-07 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Lanan, K.M. and Crosby, B.T., 2011, Can Mapping Glacial Deposits Help Predict the Location of Future Thermal Erosion Features in Arctic Alaska? A study from the Selawik River Basin, Northwest Alaska, Abstract C41C-0421 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Rowland, J.C., Gangodagamage, C., Wilson, C.J., Prancevic, J.P., Brumby, S.P., Marsh, P., Crosby, B.T., 2011, Scaling Laws in Arctic Permafrost River Basins: Statistical Signature in Transition, Abstract C41C-0424 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Tennant, C.J., Crosby, B.T., 2011, The Influence of Precipitation Phase on Hydrograph Form, Abstract H43I-1346 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Baxter, C.V., Davis, J.M., Crosby, B.T., Pierce, J. L., Rosi-Marshall, E., 2011, Indirect Effects of Climate Change on Stream-Riparian Ecosystems: A View on Forest, Fire, and Flow Dynamics from Idaho's Salmon River Basin, American Fisheries Society, Seattle, WA.

Crosby, B.T., Arctic LCC hydrology working group, 2011, Building a Hydrology Science Plan for the Arctic Landscape Conservation Cooperative, Fourth Interagency Conference on Research in the Watersheds, Fairbanks, AK.

Crosby, B. T. and Rowland, J.C., 2011, Terrestrial Disturbances – Aquatic Implications: The effects of fire and thermal erosion in the Selawik River Watershed, Northwest Alaska CESU Meeting, Anchorage, AK

Davis, J. M., Minshall, G. W., Baxter, C. V., Olson, N. F., Tang, C., Crosby, B. T., 2011, Predicting Effects of Earlier Runoff on Periphyton: Implications of Climate Change from a 20-Year Study of Wilderness Streams in Idaho, North American Benthological Society Annual Meeting, Providence, RI.

## 2010

Rowland, J.C., Crosby, B.T., Travis, B.J., 2010, The potential influence of thaw slumps and sea-level rise on the Arctic carbon cycle (INVITED), Abstract NH13B-1150, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

Crosby, B. T., 2010, Constructing a Temporal and Spatial Record of Lightning Strikes in Arctic Alaska: Discerning between increased strike frequency and increased detection capability, Abstract C31A-0508, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

2009

- Krieger, K.E., Crosby, B.T., 2010, The Topographic Evolution of Thermal Erosion Features: an investigation using an airborne LiDAR transect across a chronosequence of glacial deposits, Abstract C41C-07, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Phillips, C.B., Jerolmack, D.J., Crosby, B. T., 2010, Seepage erosion of Arctic coastal bluffs driven by thawing permafrost in Northwest Alaska, Abstract EP53D-0646, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Godsey, S., Gooseff, M.N., Johnson, C., Lewkowicz, A.G., Krieger, K.E., Crosby, B.T., 2010, Hydrological and Biogeochemical Responses to Fire and Thermokarst Formation in Arctic Alaska Abstract GC43A-0947, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Tennant, C.J., Crosby, B.T., 2010, Designing Hydroecologic-Geomorphic Monitoring Networks to Capture Heterogeneity and Predict the Influence of Climate Change on Hydrologic, Ecologic and Geomorphic Processes, Abstract H43D-1293, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Tang, C., Crosby, B. T., Chen, D., 2010, The impacts of climate changes on streamflow in the Salmon River Basin, Abstract H51A-0875, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Tennant, C.J., Crosby, B.T., 2010, The Influence of Precipitation Phase on Hydrograph Form, Geological Society of America *Abstracts with Programs*, Vol. 42, No. 5, p. 315
- Krieger, K.E., Crosby, B.T., 2010, High Resolution Geomorphic Characterization and Evolution of Thermal Erosion Features, Arctic Alaska, Geological Society of America *Abstracts with Programs*, Vol. 42, No. 5, p. 176
- Cornell, J. J., J. M. Davis, G. W. Minshall, C. V. Baxter, A. T. Rugenski, N. F. Olson, and B. T. Crosby, 2010, Effects of Earlier Spring Snow Melt On Periphyton Biomass: Potential Climate Change Implications from A 20-Year Study of a Wilderness Stream Ecosystem, NABS Meeting, Santa Fe, NM.
- Davis, J., Baxter, C., Crosby, B., Rosi-Marshall, E., Pierce, J., 2010, Do Indirect Effects of Global Climate Change On Forest, Fire, And Flow Dynamics Mediate Responses of Stream-Riparian Ecosystems? NABS Meeting, Santa Fe, NM.
- Tang, C., Crosby, B. T., Wheaton, J.M., 2010, How Climate Changes impact on Streamflow in the Salmon River Basin, USU Spring Runoff Conference Proceedings, p. 5, Logan, Utah
- Tennant, C.J., Crosby, B.T., 2010, The Influence of Topography on Runoff for Selected Tributaries to the Salmon River, Idaho, USU Spring Runoff Conference Proceedings, p. 17, Logan, Utah
- Crosby, B. T., 2009, Progressive Growth, Modulated Supply: How coupling and decoupling between an enormous retrogressive thaw slump and its depositional fan impacts sediment delivery to the Selawik River, Northwest Alaska, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U41C-0043.
- Krieger, K., Crosby, B. T., Phillips, C., Godsey, S., Jerolmack, D. J., 2009, Slump Scaling: Common Geometries Observed from Retrogressive Thaw Slumps in Three Different Environments in Arctic Alaska, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U41C-0044.
- Pierce, J. L. Baxter, C. V., Yager, E. M., Fremier, A. K., Crosby, B.T., Smith, A. M., Kennedy, B., Hicke, J. A., Feris, K., 2009, Forests, fire, floods and fish: nonlinear biophysical responses to changing climate, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U13B-0074.
- Tang, C., Crosby, B. T., Wheaton, J. M., 2009, From Snow to Rain: Assessing streamflow sensitivity to changes in climate using a hydrologic model for the Salmon River Basin, Idaho, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H33E-0928.
- Tennant, C. J., Crosby, B. T., 2009, Distinct Regimes: Using Hypsometry and Field Observations to Predict the Hydrologic and Geomorphic Response to Changes in Precipitation Phases within the Salmon River, Idaho, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U43A-0064.
- Crosby, B. T., 2009, The Interplay Between Storage and Delivery: An Examination of Temporally Varying Sediment Flux to the Selawik River from an Enormous Retrogressive Thaw Slump, NW Alaska; Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 574.
- Olson, N. F., Crosby, B. T., 2009, Influences of Topography on Spring Runoff, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 290.
- Tennant, C. J., Crosby, B. T., 2009, Distinct Regimes: The Hydrology and Geomorphology of Twelve Tributaries to the Salmon River, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 289.

- Whitehead, K. M., Crosby, B. T., Mahar, J., 2009, Using High-Resolution DEMs to Identify Spatial Correlations Between Topographic Form and Hillslope Failure Mechanisms, Southern California, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 677.
- Olson, N. F., Crosby, B. T., 2009, Topographic Controls on the Magnitude and Timing of Peak Spring Runoff in a Snow-Dominated Basin in Central Idaho, USU Spring Runoff Conference Proceedings, p. 27, Logan, Utah
- Tennant, C.J., Crosby, B.T., 2009, Climate Change and Potential Alterations in the Timing and Magnitude of Snow-Melt Runoff Events within the Salmon River Basin, USU Spring Runoff Conference Proceedings, p. 26, Logan, Utah
- 2008**
- Carlson, E. J., Crosby, B. T. and Olson, N. F., 2008, Temporal and Spatial Variation in Tributary and Mainstem Suspended Sediment Fluxes in Big Creek, a Recently Burned Sub-Alpine Idaho Catchment, *Eos Trans. AGU*, 89 (53), Fall Meet. Suppl., Abstract H53C-1089.
- Crosby, B. T., and C. V. Baxter, 2008, Scaling the Geomorphic and Ecological Consequences of Contemporary Climate Change Within the Salmon River Watershed, Central Idaho: A View from Taylor Ranch Field Station, *Eos Trans. AGU*, 89 (53), Fall Meet. Suppl., Abstract H13C-0947.
- Olson, N. F. and B. T. Crosby, 2008, Topographic Controls on the Distribution and Timing of Spring Runoff in a Snow- Dominated Basin in Central Idaho, *Eos Trans. AGU*, 89 (53), Fall Meet. Suppl., Abstract H31E-0920.
- Whitehead, K., B. T. Crosby, and J. Mahar, 2008, Variation in Geologic and Topographic Setting Cause Spatial Correlations Between Hillslope Failure Mechanisms in the Ridge Basin, California, *Eos Trans. AGU*, 89 (53), Fall Meet. Suppl., Abstract H51F-0905.
- 2007**
- Crosby, B. T., and N. F. Olson (2007), Quantifying River Morphology in Arctic Streams: Remote Sensing and Field Based Measurement of Fluvial Response to Climate Change in Northern Alaska, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract H41D-0769.
- Olson, N. F., and B. T. Crosby (2007), Digital Mapping of Coastal Erosion on the Baldwin Peninsula, NW Alaska: Past Rates, Present Processes and Future Implications, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract GC33A-0962.
- Crosby, B. T., and N. F. Olson (2007), Landscape-Scale Geomorphic Responses to Permafrost Degradation in NW Alaska: Impacts on sediment dynamics, fish habitat and the sustainability of river villages., 15th Annual Conference on the Arctic, Pocatello, ID.
- Crosby, B. T., and J. S. Willenbring (2007), Evaluating the Crustal Conveyor: an analysis of terraces and channel profiles along the South Fork Eel River, Northern California, Geological Society of America *Abstracts with Programs*, Vol. 39, No. 6, p. 262.
- Knoop, P., D. Mogk, B. T. Crosby, M. Helper, M. Manone, N. Niemi, J. Snyder, B. Van Der Pluijm, T. Wawrzyniec, and D. Walker (2007), Using Digital Information Technologies in Geoscience Field Courses, Geological Society of America *Abstracts with Programs*, Vol. 39, No. 6, p. 622.
- 2006 and earlier**
- Crosby, B. T., and Whipple, K. X., 2006, Application of Digital Field Tools for Geomorphic Analysis to Incisional River Networks: EOS AGU, v. 87, no. 52, p. Fall Meet. Suppl., Abstract H13E-1446, San Francisco, CA.
- Crosby, B. T., and Whipple, K. X., 2006, Knickpoints and Terraces: Delays in the upstream transmission of fluvial incision signals, in NSF MARGINS Theoretical Institute 2006: Teleconnections Between Source & Sink in Sediment Dispersal Systems, Eureka, CA.
- Crosby, B. T., Whipple, K.X., Gasparini, N.M., Wobus, C.W., 2005, Knickpoint Generation and Persistence Following Base-Level Fall: An Examination of Erosional Thresholds in Sediment Flux Dependent Erosion Models (INVITED), AGU, Fall Meeting, San Francisco, CA
- Crosby, B. T., Whipple, K.X., 2005, Bedrock River Incision Following Aggradation: Observations from the Waipaoa River Regarding Tributary Response to Mainstem Incision and the Role of Paleotopography, AGU, Fall, San Francisco, CA
- Whipple, K.X, Heimsath, A., Ouimet, W.B., Crosby, B.T., Wobus, C.W., 2005, The Relation Between Topography and Millennial Erosion Rates in the San Gabriel Mountains, California, AGU, Fall, San Francisco, CA
- Crosby, B. T., Whipple, K.X., 2004, Knickpoints in Fluvial Systems: Comparing Models of Basin-Wide Propagation and Initiation at Erosional Thresholds, AGU, Fall Meeting, San Francisco, CA
- Wobus, C.W., Crosby, B.T., Whipple, K.X., 2004, Hanging Valleys in Fluvial Systems: A Failure of Stream Power and Implications for Landscape Evolution, AGU, Fall Meeting, San Francisco, CA
- Crosby, B.T., Whipple, K.X., 2004, Knickpoint Initiation and Distribution within Fluvial Networks: two

- models for distributing a pulse of incision in a fluvial network, GSA Meeting, Denver, CO
- Crosby, B. T., Whipple, K., 2002, Knickpoint Migration in the Waipaoa River: An Examination of the Rate and Form of Transient Behavior in Fluvial Networks, AGU, Fall Meeting, San Francisco, CA
- Crosby, B. T., Dietrich, W.E., 1999, Terraces on the South Fork of the Eel River, California: Geological Society of America, Cordilleran Section, 95th annual meeting abstracts, 31(6), p.48

## Awards and Honors

- Awarded Outstanding Researcher at Idaho State University 2016
- Selected as Fulbright Scholar for Chile 2013-2014
- Awarded N.S.F. distinction as “Person of Excellence” for work during GRF fellowship 2006
- Awarded N.S.F. Graduate Research Fellowship (GRF) 2000-2005

## University Service

- Idaho State University / Pocatello, ID (2006- )

### *Department Level:*

- Chair of Departmental Tenure and Promotion Review Committee
  - Godsey (2x), Lori Tapanila, Thackray
- Member of Departmental Tenure and Promotion Review Committees:
  - Ames, Leif Tapanila, Glenn, Lohse, Link
- Member of 5 Departmental Search Committees, Chair for 1:
  - Cyberinfrastructure TT-AP, Spatial Hydrologist TT-AP, Volcanologist TT-AP, GIS Instructor/Lecturer, Surface Processes VAP
- Facilities Director for Lost River Field Station, 2008-2013
- Design, Development and Management of ISU WaterLab Flume Facility
- Member of review committee for departmental ‘Geslin Fund’ research award, 2013, 2016
- Faculty Representative for the Digital Mapping Laboratory, directed renovation
- Alternate for Chair’s meetings and University Curriculum Council meetings
- Committee to redesign the Earth and Environmental Sciences major/curriculum
- Committee to design catalog copy for the new Geosciences PhD Program
- Co-Advisor for Earth and Environmental Sciences BA/BS program (~30 students advised)
- Departmental Colloquium Director (2010-2012)
- ISU Geoscience representative to the Center for Ecosystem Research and Education (CERE)
- Geotechnologies Faculty Member
- Departmental Representative for “Evening of Opportunity,” Ug. Recruitment (3x)
- Departmental Representative for “Major’s Fair,” Ug. Recruitment (5x)

### *University Level:*

- CoSE Dean Search Committee, Member 2017-2018
- Strategic Planning Workgroup, Member, Spokes-person 2016-2018
- ISU Honors Program, Mentor and Invited Lecturer: UG Science Research, 2015-2017
- General Education Requirements Committee (Member 2006-09, Secretary 2011-13)
- Adventure Learning MILES outreach program, Lecturer, 2016, 2017
- Invited speaker: student run Climate Change Forum and film showing, 11/2016
- Invited Presentation: Sabbatical Reflections: Inspiring Faculty to Be Fulbright Scholars, 2014
- CoSE Promotion and Tenure Review Committee, Member (2013)
- Sabbatical Review Committee (2006-2010)
- Invited panelist for Student Affairs Committee under the Academic Affairs Office
- Established for ISU’s partnership with the N. and W. AK Coop. Ecosystem Studies Unit (2009)
- Established for ISU’s research partnership with UNAVCO (2008)
- Helped established for ISU’s research partnership with CUAHSI (2010)
- MIT / Boston, MA
  - 1 of 15 MIT students selected to advise the new MIT President on student affairs (2004-2005)
  - Vice-President of “EGSAC,” MIT departmental student organization, (2002-2005)
  - Member of departmental mentoring program: advising incoming grad students. (2003-2005)
  - Course Mentor, ‘Earthscope’ freshman research initiative: “ANWR and/or Oil?” (Fall 2003)
- UC Berkeley, Berkeley, CA
  - Student Rep. of the Curriculum Committee, Geology Department (1997-1999)
  - Founder and President of “Berkeley Rocks”: student advocacy group for Earth Science undergraduates. (1996-1999)

## Professional Service and Affiliations

- Selected to serve on UNAVCO's Terrestrial Imaging Geodesy Working Group (TIGWiG) (2017-2020)
- AGU-Earth and Planetary Surface Processes Focus Group Program Committee (2015-2018)
- ISU Representative to CHAHSI (Consortium of Univ. for the Adv. of Hydrologic Science, Inc.)
- ISU Representative to UNAVCO, a consortium for geoscience research and education
- Member, CHAHSI-HIS User Committee. (2012-2013)
- Field Trip Leader: Friends of the Pleistocene: "The Bonneville Flood—Revisited!"
- Field Trip Presenter: Friends of the Pleistocene: "Fire and Ice, Sawtooth Mountains, Central ID"
- Affiliate Faculty with the Idaho Museum of Natural History
  - Docent training talks (3x), Exhibit development, Outreach Participant
- Chair for Sessions at Professional Meetings
  - "Incorporating Geodesy into Undergraduate Curriculum" GSA 2016
  - "Thermal Control on Weathering, Erosion and Landscape Evolution," AGU 2012
  - "Community Earth-surface science: Articulating a vision for the future" AGU Townhall, 2011
  - "Hydrogeomorphic processes in hillslopes, rivers, and landscapes," GSA, 2010
  - "Response of the Arctic Landscape to a Warming Climate," AGU, 2009
  - "Surface Processes" Chaired Session for 14<sup>th</sup> ICE & 42<sup>nd</sup> EGGES, Pocatello, 2010
  - "Watersheds," Intermountain Conference for the Environment, 2009
  - "Deformation and the landscape: Quantitative approaches to tectonic geomorphology," GSA, 2007
- Peer Review of Publications
  - Nature, Geology, Earth Surface Dynamics, J. of Geophysical Research, Geophysical Research Letters, J. of Geology, Earth and Planetary Science Letters, USGS Publications, EOS, Geomorphology, Earth Surface Processes and Landforms, Marine Geology, PLoS ONE, Permafrost and Periglacial Processes, New Zealand Journal of Marine and Freshwater Research
- Peer Review of Proposals
  - NSF Panels (Arctic Observing Network, 2011, Coupled Human and Natural Systems, 2016,2017)
  - Fulbright Scholar Program: US review panel for Chile applicants, 2016-17
  - NSF (Many proposals in different divisions, CAREER, Geo, EPSCoR, Arctic)
  - NASA
  - DOE
  - American Chemical Society's PRF
  - United States-Israel Binational Science Foundation
- Invited Lecturer
  - CUAHSI 2016 Biennial Colloquia on Water Science, 07/25/2016
  - Geologists of Jackson Hole, 03/01/2016
  - Colorado State University, 2/18/2016
  - Boise State University, 04/30/07, 02/27/2012, 10/19/2015
  - Los Alamos National Laboratory, 05/05/2011
  - University of Oregon, 05/25/2011
  - APECS Early Career Series, 2011 ([Vimeo Link](#))
  - Utah State University, 2010, 2007
  - University of Montana, 2008
  - University of Idaho, 2007
- Judge for student presentations at professional meetings
  - AGU 2011, 2012, 2014, 2015, 2016
  - 3<sup>rd</sup> and 4<sup>th</sup> Annual Tri-State Meeting Poster Competitions, NSF EPSCoR
- Senior Personnel / Advisory Group, Cent. For Ecohydraulics, U of I, Mountain Stream Lab
- Professional Affiliations
  - American Geophysical Union, Geologic Society of America, Sigma Xi

## Public Service

- Pocatello, ID (2006- )
  - Marsh Creek Restoration Opportunities, Centennial Rotary, 11/2018
  - Marsh Creek Restoration Opportunities, Pocatello/Chubuck City Councils, 10/2018
  - Planning Committee and Instructor for International Envirothon Mtg., 7/2018
    - ~200 students, field instruction and assessment
  - Invited speaker for the “Citizens' Climate Lobby” 2/2017
  - Invited speaker at the “Wild and Scenic Film Festival,” 1/2017
  - Invited speaker at the “Climate Change is not a Hoax” 11/2016
  - Interviewed for the podcast, “Don’t Panic Geocast” regarding Alaska research. 10/28/2016
  - Radio interview on KOTZ regarding Arctic research, 6/28/2016
  - Expert interview on KPVI television, Landslide Hazards, 2/25/2016
  - Bannock County Bike to Work Committee, 2015,2016, 2017
  - Portneuf Watershed Partnership, 2008-present
  - Invited lecture at ISU’s New Knowledge Adventurers: 09/2015, 10/2015
  - Invited lecture, Rotary Club, 4/2015; Lion’s Club, 4/2015
  - Invited lecture, for Yellowstone Sci. Expedition, Pocatello Comm. Charter Sch., 2012, 2013, 2016
  - Field Trip Leader/Lecture: Starlight Formation Clay Quarry. Franklin Middle School, 9/2014
  - Science Advisor to the civic group Valley Pride regarding the Portneuf River Restoration Project
  - Group leader, Portneuf River Clean-Up (5 years)
  - Guest lecture History of Yellowstone, Pocatello Comm. Charter School
  - Guest Lecturer, Pocatello Zoo; “The Great Climate Debate”
  - Presenter within Docents Program at the ISU Museum of Natural History (3 years)
  - Design and construction of Parade Float for Jefferson Elementary (2 years)
  - Participant and educator for natural science field trips: Jefferson Elementary
  - Occasional builder with Habitat for Humanity
- Boston, MA, Berkely, CA (2000-2006)
  - Guest Lecturer / Thesis Advisor Milton Academy (high school) (2002-2004)
  - Website design for St. Christopher’s Preschool
  - Public Relations for Cooperative Student Housing, City of Berkeley, CA (1995-1999)

## Synergistic activities

*Author of website and computational tools for topographic analysis* (2003-present)

Tools were developed to allow users to extract topographic data from digital elevation maps using the combined computational efficiency of ArcGIS and MATLAB. These tools are currently in use at numerous institutions by research groups in Geology, Biology and Engineering departments. The tools are now freely available (<http://geomorphtools.geology.isu.edu/>) and an [oversubscribed short course](#) (#506) was taught at the 2007 GSA Meeting in Denver. Discussion forum added to website in Jan, 2009. Open to public Feb, 2009.

*Development of online geomorphology curriculum* (2006-present)

I have created numerous different tutorials, vignettes and other media for geoscience teaching:  
-Curriculum for Digital Fieldwork, [MIT Camp](#), [Shortcourse](#), ISU [Geo/Enviro](#) Camps  
-[Surface Processes and Landscape Evolution](#), MIT OpenCourseware  
-[Hydraulic Geometry in the Greys River Watershed](#), SERC teaching activities  
-[Dam in the Wilderness: Building "Green Hydropower"](#) SERC teaching activities  
-[River Knickpoints Vignette](#), part of [Key Concepts in Geomorphology](#) text

*Seminars and Shortcourses Regarding Arctic Research, Kotzebue, AK* (2006, 07,09,10,11)

Following each field season, I meet with agency managers and staff at the NPS, US FWS and Native Corporations to present the findings of my summer research. I also receive direction from these groups regarding which concerns are of greatest importance to their missions. I also provide public lectures open to the general community to share our research findings.

*Management of Digital Mapping Laboratory, ISU-Geosciences* (2006-present)

I oversee the operation of [this facility](#) and the maintenance of the hardware and software therein. Though my students are the most intensive users of the facility, I am responsible for assuring that all researchers in the department have the optimum equipment to complete the geospatial or computational components of their work.



*Advisor within departmental mentoring program (graduate and undergraduate students).* (2003-2006)  
*Geologic curriculum development for Native Alaskan students, N.P.S., Kotzebue, Alaska* (1999-2000)

## Teaching Experience

*As Assistant and Associate Professor: Idaho State University*

- Geol 1100, The Dynamic Earth: Earth System Science (UG, ~130 students) (06,8,9,10,12,14,16,17)  
 Designed course. Lectures and assisting with creation of new labs
- Geol 2282, Undergraduate Lab Experience (UG, 1-2) (16)  
 Independent research projects for students. Direct supervision.
- Geol 3315, Evolution of the Earth's Surface (UG ~20 students) (09,10,13,16,17)  
 Lecture, Lab, Field. New offering with all new curriculum and exercises
- Geol 4402/5502, Geomorphology (UG/G, 15 students) (06,7,8,10,12,15,17)  
 Lecture, lab and field course with emphasis on GIS and quantitative tools
- Geol 4450, Field Geology (UG/G 25) (07,8,11,12,16,17)  
 Instruction on field techniques for geologic/digital mapping and struct/geomorph interp.
- Geol 4451/5551, Field Methods in Environmental Sciences (UG/G 15) (15,18)  
 New curriculum. Design and implementation of interdisciplinary 2-week capstone.
- Geol 4482, Independent Problems and Studies in Geology (UG, 1-2) (08,10,12,13,15,16)  
 Independent coursework or research activities. Direct supervision.
- Geol 4491, Advanced Field Seminar (UG/G, 25) (07,10,12,16)  
 Planning and execution of 9-day field excursions  
 Death Valley, Western Wyoming, Utah's Henry Mtns., SE Oregon
- Geol 4493, Senior Thesis (UG, 1) (08,10,14)  
 Supervision of advanced undergraduate research
- Geol 5599, Surface Processes Seminar (G, 10) (2008)  
 Reading and synthesis seminar for incoming and senior graduate students
- Geol 5599, River Mechanics and Field Techniques (G, 10) (2009)  
 In-depth study for stream ecology/geomorphology/civil engineering students
- Geol 5599, Quantitative Tools for Earth Scientists (G, 15) (09,11)  
 Development of modeling and analytical skills in MATLAB
- Geol 5599, Arctic Surface Processes/Water seminar; (G, 30) (10, 11)  
 A coordinated interdisciplinary study with students/faculty at multiple universities
- Geol 5599, Reading Seminar (15,16)  
 Group discussion and analysis of professional papers
- Geol 6601, Advance Physical Geology (G, ~8) (07,8,10,14,15)  
 Required for all incoming students, research and discussion skills
- Geol 6602, Advanced Geomorphology. New course every time! (G, ~15)  
 Climate, Tectonics and Erosion; Graduate Level (2007)  
 Geomorphology of Managed Rivers: dams, fires, forestry, restoration (2008)  
 Mass and Energy Conservation Principles and Surface Processes (2012)  
 Hillslope Processes in the Built and Natural Environment; Graduate (2015)  
 Fluvial Form and Process (2017)
- Visiting Fulbright Scholar, Universidad de Concepción, Chile*
- Hillslope Processes in the Built and Natural Environment ('*Riesgos en Laderas*') (Fall, 2013)  
 Ug., Grad course on Hillslope transport process and implications for engineers
- Graduate Research seminar (Fall, 2013)  
 Supervision and advising of students on research, presentations, publications
- Teaching Assistant: M.I.T.*
- Field Geology I and II: Traditional & Digital Tools: (2005-2006)  
 Lectures, labs, field trips, 4-week field course, GIS tool development, web design.
- Surface Processes & Landscape Evolution: (Fall 02, 04)  
 Lectures, labs, field trips, GIS tools development, web design.
- Senior Thesis Course: (Spring 2004)  
 Advised students on research projects and supervised thesis writing.  
 Authored the departmental 'Undergraduate Handbook for Thesis Preparation.'
- Teaching Assistant: U.C. Berkeley*
- Fluvial Geomorphology in River Restoration (Fall, 2004)  
 Lectures, documentation preparation, field and lab exercises.
- Teaching Assistant: Harvard University, Extension School*
- Earth Surface Processes (Spring, 2003)  
 Occasional Lecture, Laboratories, Advised students during research projects

## Technical Skills

*GIS Software:* the ArcGIS family: [ArcMap, ArcToolbox, ArcScene, ArcCatalog], ArcINFO

*Field Hydrology Tools:* Acoustic Doppler Velocimeters/Profilers, YSI Multi-Parameter Sondes, Level loggers

*Hydrologic Models:* VIC (Variable Infiltration Capacity Model)

*Sediment Sampling/Tracking Tools:* ISCO pumps, Isokinetic Samplers (hand and bridge-based), RFID Tracers

*Geochronology Sampling:* OSL, Detrital, meteoric and in-situ cosmogenic nuclide, <sup>14</sup>C

*Geochemical Sampling:* Li-Cor CO<sub>2</sub> chambers, Dogbone isotope samplers, river and soil water sampling

*GPS and Surveying tools:*

Reigl, Leica and Optech ground-based LiDAR,

Leica Robotic Total Stations, Leica System 1200 RTK Survey-Grade GPS,

Trimble Geo- and Pro-series GPS;

Integrated hand-held computer/laser rangefinder/GPS, DGPS, Rod-Level, etc.

*Environmental Sensors:* Campbell Scientific, Sutron, Onset-HOBO loggers, iButtons, Time-Lapse Cameras

*Remote Sensing Software:* RSI's ENVI, ERDAS Imagine, PCI Geomatica, Leica suite

*Computational Software:* Matlab (preferred language), Excel

*Graphic Design:* Illustrator, Photoshop, Premier Pro (digital video), Dreamweaver (web design), etc.

## Short Courses and Workshops

- Invited participant and speaker, "Workshop to Explore Extending PGC Support of NSF GEO Investigators." Univ. of Minnesota, May, 2017
- Coauthor, "Using TLS and structure from motion (SfM) photogrammetry in undergraduate field education" Geological Society of America Shortcourse, 10/2016
- Organizer and instructor at workshop, "Using TLS and structure from motion (SfM) photogrammetry in undergraduate field education," Sponsored by UNAVCO/ISU/Indiana University, 8/2016
- Invited presentation and participant: "Field Education and Support by the UNAVCO GAGE Facility," November 17-18, 2014, Boulder, Colorado
- Invited presentation and participant: "The Field Tradition in Geomorphology," 43rd Annual Binghamton Geomorphology Symposium, September, 2012, Jackson Hole, WY
- Invited speaker and participant: "The Sedimentary Record of Landscape Dynamics," Meeting of Young Researchers in the Earth Sciences V, (MYRES), August, 2012, Salt Lake City, UT
- Invited participant: "Community Workshop: Charting the Future of Terrestrial Laser Scanning (TLS) in the Earth Sciences and Related Fields", UNAVCO Facility, October, 2011; Boulder, CO
- Invited participant: "New Tools in Process-Based Analysis of Lidar Topographic Data Workshop," June, 2010; Boulder, CO
- NSF – Margins, "Source to Sink" Workshop; Invited Co-chair of Modeling session, New Zealand, 2009
- Invited Participant, "Teaching Geomorphology in the 21<sup>st</sup> century" July, 2008; Fort Collins, CO
- Invited Participant, MYRES 2008, "Life and Landscape," New Orleans, LA
- Co-Author Short-Course: "Computational tools for Geomorphology/GIS/Stream Profile Extraction"
  - Released through workshops at GSA professional meeting in 2007
- Authored Shortcourse on Digital Tools for Field Science, July, 2007 Taylor Ranch
- Invited participant, GeoPads Conference, 2007
- Cutting Edge Workshop for Early Career Faculty, 2007
- ISU GIS Day Presentation, "GIS Tools for Digital Field Geology", 2006
- Fluvial Geomorphology: Principles and Practice, Univ.of California, 2006
- Invited presentation: NSF-MARGINS Workshop on the Waipaoa Focus Area (Source-to-Sink Initiative), Wellington, New Zealand: May, 2003.
- France/New Zealand Cooperative Project: A Workshop on Sediment Management in River Systems: Gisborne, New Zealand, February, 2003